

CLAIMS

5 1. A black ink-jet ink, comprising:

a) a liquid vehicle, including:

i) water,

ii) a cosolvent,

ii) a solubilized naturally occurring amino acid, and

10 iii) an amphoteric surfactant; and

b) a black colorant solubilized or dispersed in the liquid vehicle.

2. A black ink-jet ink as in claim 1, wherein the naturally occurring amino acid is selected from the group consisting of alanine, arginine, asparagine,
15 aspartic acid, cysteine, cystine, glutamine, glutamic acid, glycine, histidine, hydroxyproline, isoleucine, leucine, lysine, methionine, ornithine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine, dipeptides, tripeptides, tetrapeptides, and combinations thereof.

20 3. A black ink-jet ink as in claim 1, wherein the naturally occurring amino acid is present in the liquid vehicle at from 0.1 wt% to 10 wt%.

4. A black ink-jet ink as in claim 1, wherein the amphoteric surfactant is selected from the group consisting of alkyl betaines, alkyl amidopropyl betaines,
25 cocobetaines, cocoamidopropyl betaines, hydroxysulfo betaines, cocohydroxysulfo betaines, cocoamphodipropionates, cocoamphopropionates, sulfobetaines, alkyl amine dicarboxylates, polyglycol ether derivatives, N-alkyl glycinate, N-cocobetaine aminobutyric acids, lecithins and enzyme modified lecithins, hydroxylated lecithins, soy phosphatides, oleyl betaines, lauryl dimethyl
30 amine oxides, alkylimino-dipropionates, alkylampho-propionates, cocoamphodiacetates, cocoamphodiacetates, alkyliminodipropionates, alkylamphodipropionates, alkylamphodiacetates, and combinations thereof.

5. A black ink-jet ink as in claim 1, wherein the amphoteric surfactant is present in the liquid vehicle at from 0.01 wt% to 2 wt%.

5 6. A black ink-jet ink as in claim 1, wherein the black colorant is a dye selected from the group consisting of pacified Reactive Black 31, Direct Black 168, Acid Black 52, Direct Black 170, Direct Black 22, Direct Black 19, Direct Black IJ Dye, Reactive Black 8, Solvent Black 13, Food Black 2, copper complexed azo black, and combinations thereof.

10 7. A black ink-jet ink as in claim 1, wherein the black dye is present in the ink-jet ink at from 0.1 wt% to 10 wt%

15 8. A black ink-jet ink as in claim 1, wherein the ink-jet ink has a pH from 6 to 8.

9. A black ink-jet ink as in claim 8, wherein the ink-jet ink has a pH of about 7.

20 10. A black ink-jet ink as in claim 8, wherein the ink-jet ink includes an acid to lower the pH to from 8 to 6.

11. A black ink-jet ink as in claim 8, wherein the ink-jet ink includes a base to raise the pH to from 6 to 8.

25 12. A black ink-jet ink as in claim 1, said ink-jet ink being free of reactive agents, such that the ink-jet ink is non-reactive.

13. A method of generating an image on uncoated paper, comprising:
30 (a) formulating a black ink-jet ink including a liquid vehicle and a black colorant solubilized or dispersed in the liquid vehicle, said liquid vehicle including:
 i) water,

ii) a cosolvent;

ii) a solubilized naturally occurring amino acid, and

iii) an amphoteric surfactant; and

(b) ink-jetting the black ink-jet ink onto an uncoated paper.

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14. A method as in claim 13, wherein the colorant, the naturally occurring amino acid, and the amphoteric surfactant work synergistically to reduce the black ink-jet ink penetration into the paper.

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15. A method as in claim 13, wherein the naturally occurring amino acid is selected from the group consisting of alanine, arginine, asparagine, aspartic acid, cysteine, cystine, glutamine, glutamic acid, glycine, histidine, hydroxyproline, isoleucine, leucine, lysine, methionine, ornithine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine, amino acid dipeptides, amino acid tripeptides, amino acid tetrapeptides, and combinations thereof.

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16. A method as in claim 13, wherein the naturally occurring amino acid is present in the liquid vehicle at from 0.1 wt% to 10 wt%.

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17. A method as in claim 13, wherein the amphoteric surfactant is selected from the group consisting of alkyl betaines, alkyl amidopropyl betaines, cocobetaines, cocoamidopropyl betaines, hydroxysulfo betaines, cocohydroxysulfo betaines, cocoamphodipropionates, cocoamphopropionates, sulfobetaines, alkyl amine dicarboxylates, polyglycol ether derivatives, N-alkyl glycinate, N-cocobetaine aminobutyric acids, lecithins and enzyme modified lecithins, hydroxylated lecithins, soy phosphatides, oleyl betaines, lauryl dimethyl amine oxides, alkylimino-dipropionates, alkylampho-propionates, cocoamphodiacetates, cocoamphodipropionates, alkylaminodipropionates, alkylamphodipropionates, alkylamphodiacetates, and combinations thereof.

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18. A method as in claim 13, wherein the amphoteric surfactant is present in the liquid vehicle at from 0.01 wt% to 2 wt%.

19. A method as in claim 13, wherein the black colorant is a black dye selected from the group consisting of pacified Reactive Black 31, Direct Black 168, Acid Black 52, Direct Black 170, Direct Black 22, Direct Black 19, Direct Black IJ Dye, Direct Black 168, Reactive Black 8, Solvent Black 13, Food Black 2, copper complexed azo black, and combinations thereof.

20. A method as in claim 19, wherein the black dye is present in the black ink-jet ink at from 0.1 wt% to 10 wt%

21. A method as in claim 13, wherein the black ink-jet ink has a pH from 6 to 8.

22. A method as in claim 13, further comprising the step of ink-jetting a colored ink-jet ink onto the uncoated paper such that a border of the colored ink-jet ink contacts a border of the black ink-jet ink, and wherein the colored ink-jet ink and the black ink-jet ink are non-reactive with respect to one another.